

**DAYLIGHT &
SUNLIGHT
REPORT**

relating to the

**PROPOSED
DEVELOPMENT**

of

**MARKETFIELD WAY,
REDHILL,
SURREY RH1**

on behalf of

**REIGATE AND
BANSTEAD
BOROUGH COUNCIL**

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1.0 EXECUTIVE SUMMARY

Our assessment, in accordance with the BRE Site Layout Planning for Daylight and Sunlight, concludes that for all residential windows analysed, the proposals will have relatively minor effects for an urban context. Whilst there are a small number of isolated 'noticeable' reductions to existing residential windows in terms of vertical sky component (VSC), which is a measure of daylight at the centre of a window, in consideration of the average daylight factor (ADF), which is a measure of daylight within the room, in the proposed scenario, an adequate level of ADF is still maintained to the rooms served by these windows. It must also be considered that some existing residential windows currently obtain particularly high levels of VSC, not ordinarily expected for an urban context, due to the relatively open-aspect that is applicable to the car park area of the site (thus VSC is more sensitive to changes / increases in massing).

Equally, there are no noticeable reductions adequate target levels of sunlight in reference to the main annual probable sunlight hours to existing neighbouring residential properties in maintained. Therefore, on balance, it could be considered there are no material grounds relating to any significant adverse effect to daylight and sunlight resulting from the proposals.

In the proposed buildings, as per the BRE Guide, we have assessed Average Daylight Factors (ADFs) to habitable rooms and our analysis shows that all these rooms will largely attain ADF levels equal or above the target values set in the BRE Guide and BS 8206-2 and that reasonable sunlight is provided to living rooms (for applicable orientation) and also to the amenity area.

2.0 OVERVIEW

From a daylight and sunlight review (with analysis applicable to increased massing and effect on surrounding residential properties), the proposed scheme consists of developing the car park land west of Marketfield Way and also redevelopment (demolition and new build) to the existing retail block along the east side of the High Street existing between Marylebone House and Red Central offices. The new development will comprise a mixed use scheme of commercial to ground floor with residential apartment blocks above and also a cinema to the north end of the site.

These proposals are shown in detail on the planning drawings prepared by PRP Architects and we have, therefore, not reproduced these here except as a series of isometric drawings (please see Appendix 2) showing the proposal (existing buildings on the site coloured green and the proposal coloured red) along with the surrounding building and window references to enable the analysis tables and other descriptions within this report to be more readily understood.

3.0 INSTRUCTIONS

Our instructions are to assess the effects of the planning proposals made by the proposed development on the surrounding residential properties in terms of daylight and sunlight and to report on our findings for submission to the local planning authority.

In addition, we have assessed the proposed new residential apartments to determine the Average Daylight Factors (ADFs) to demonstrate whether the proposed habitable rooms will provide satisfactory living standards in terms of daylight (and sunlight to living rooms) for the future occupiers.

4.0 DAYLIGHT & SUNLIGHT

4.1 BACKGROUND

Daylight and sunlight amenities are considerations that the local planning authority can take into account when determining planning applications.

The site is within Redhill town centre and the local planning authority being Reigate & Banstead Borough Council with the Reigate and Banstead Local Plan : Core Strategy (Adopted July 2014). Within the Core Strategies are policies which to seek protection amenity but equally, recognises that some effect is inevitable with development e.g. Policy No 9(v) *'to not seriously affect amenities of surrounding properties but recognise these may be difficult to reconcile'*

Although there is no strict national planning *policy* relating to daylight and sunlight and overshadowing impacts, the general guidance for assessing daylight and sunlight is the BRE 'Site Layout Planning for Daylight & Sunlight – A Guide to Good Practice' Second Edition published in 2011 (the "BRE Guide") which we have utilised for our assessment for neighbouring properties and also new habitable rooms being formed, utilising Average Daylight Factor criteria (ADF). The BRE Guide enables an objective assessment to be made as to whether the proposals will adversely affect the daylight and sunlight reaching existing habitable rooms.

We have also utilised ADF assessment for review of daylight to the Phoenix Plaza neighbouring property since this is not yet built / recently consented scheme and effectively consideration of daylight for such properties at design stage will ordinarily have been on an ADF basis. From an analysis basis, we have factored the massing of this building into both the existing and proposed analysis as the scheme is consented / in the progress of being constructed.

When considering the BRE Guide's ("the Guide") requirements, it is important to remember that the Guide is not to be viewed as a set of planning rules, which are either passed or failed. Numerical values are given and used, not as proscriptive or prescriptive values but as a way of comparing situations and coming to a judgement. The Guide is conceived as an aid to planning officers and designers by giving objective means of making assessments. The values given as desirable in the Guide, which are predicated on a more extensive suburban context, may not be obtainable in dense urban areas where the grain of development is tight while higher values might well be desirable in rural areas where the grain is contrastingly open.

4.2 METHODOLOGY

We have carried out an analysis of the proposed situations following the methodology set out in the BRE Guide on Daylight and Sunlight. We have primarily considered daylight, both in terms of vertical sky component (VSC) and daylight distribution analysis and have also considered sunlight (again by the method set out in the Guide) in respect of the proportion of the annual probable sunlight hours to the surrounding windows applicable.

Whilst the BRE Guide sets out the first criterion for assessing the effects of a proposal on the existing built environment in reference to the '25° test' (if the proposals subtend an angle less than 25° from a point on the adjoining window wall 2m above ground level, no further consideration is necessary as there will be an adequate potential for good natural daylighting to the adjoining windows - where the proposal subtends an angle greater than 25°, then more demanding calculations must be carried out to establish the nature of the effects of the proposals), we have moved directly towards the more detailed analysis review by means of the VSC and Daylight Distribution (the latter where rooms sizes are known / can be reasonably estimated).

We have also utilised ADF assessment for review of daylight to the Phoenix Plaza neighbouring property since this is not yet built / recently consented scheme and effectively consideration of daylight for such a property at design stage will ordinarily have been on an ADF basis.

We have worked from the design drawings and from a 3-D model prepared for the purpose. As the scheme drawings form part of the formal submission, these are not reproduced here. We have, however, shown a series of isometric drawings showing the proposal (coloured green existing and red proposed) and the surrounding building window references (please see Appendix 2).

Daylight assessment of the ADFs for the proposed building has been undertaken on the basis of standardised internal finishes such as pale colours carpets / floor coverings, magnolia walls and white ceilings. Our review of the proposed has also included sunlight review both in terms of sunlight availability to living rooms and external amenity areas (again as per the BRE Guide's criteria).

4.3 SURROUNDING BUILDINGS (EXISTING) - DAYLIGHT VSC

The Guide considers that in terms of vertical sky component (VSC), as a target value, if the VSC with the new development in place is both, less than 27% and less than 0.8 times its former value, occupants of the existing building will notice the reduction in the amount of skylight. The vertical sky component relates to the area of the dome of the sky visible from the window plane. The maximum value obtainable at a flat window in a vertical wall is 40%. Similarly to VSC, less than 0.8 times its former value for daylight distribution within a room may also be considered noticeable.

Table 1 (VSC and Sunlight for surrounding buildings) within Appendix 1 sets out the results of our examination. This shows the proposed VSC and the annual probable sunlight hours and the winter proportion, in the existing and proposed situations, based on the Architects' design proposals. The assessment ascertains the current daylight (VSC) reaching the windows of surrounding buildings and what effects the alterations as proposed will have on the existing situation. We have assessed the effects of the proposals on the following buildings:-

16-18 Station Road – residential flats above commercial (9 flats)

20 Station Road – residential flats above commercial (5 flats)

30 Station Road – residential flats above commercial (7 flats)

Marylebone House, Marketfield – residential flats above commercial (10 flats)

In respect of **Phoenix Plaza, Marketfield Way** – (not yet built - residential flats above commercial), please see section 4.5 Surrounding Buildings (Consented not yet built) – Average Daylight Factor (ADF).

Whilst we have not accessed any neighbouring properties, we have made obtained floor plans from the public realm for all properties with the exception of 20 Station Road (and 2nd floor to Marylebone House) although reasonable assumptions and interpreted where necessary have been made on likely room arrangements / uses to these particular properties based from our review of the exterior and similar properties. For Phoenix Plaza, Marketfield Way (yet to be built), we have utilised the plans / drawings within planning ref 12/00477/F and 14/00846/F.

From **Table 1** the following results can be summarised :

16-18 Station Road (1st & 2nd floors) : There are reductions in VSC of 49% to the 1st floor windows analysed and for the 2nd floor there are no reductions to two windows (ref W4 & W5) and reductions of 26% for window W1, 27% for window W2 and 28% for window W3. Whilst there are no reductions to a couple of windows, there are some windows with a reduction that exceeds the target 20% threshold where beyond, reductions may become 'noticeable'.

For the rooms served by these windows we have also undertaken review of Daylight Distribution (please see next section 4.4), but given the reductions to some of these windows / rooms in terms of VSC and Daylight Distribution, we have undertaken more detailed review of daylight to for these rooms and have calculated the average daylight factor (ADF) which BS 8206-2 sets a value of 1% or above for bedrooms and 1.5% or above for living rooms. We set-out below our findings as :-

1st floor Living room ref R1 (served by windows W1 & W2) in the proposed scenario, we have calculated an ADF of 2.17% (target is 1.5% or above).

1st floor Living room ref R2 (served by window W3) in the proposed scenario, we have calculated an ADF of 1.54% (target is 1.5% or above).

1st floor Bedroom ref R3 (served by window W4) in the proposed scenario, we have calculated an ADF of 1.55% (target is 1.0% or above).

2nd floor Living room ref R1 (served by windows W1, W4 & W5) in the proposed scenario, we have calculated an ADF of 2.14% (target is 1.5% or above).

2nd floor Bedroom ref R2 (served by window W2) in the proposed scenario, we have calculated an ADF of 1.03% (target is 1.0% or above).

2nd floor Bedroom ref R3 (served by window W3) in the proposed scenario, we have calculated an ADF of 1.14% (target is 1.0% or above).

Thus whilst some daylight reductions may be noticeable (based on VSC and Daylight Distribution) in all instances in the proposed scenario, those rooms that have a noticeable reduction in daylight could still be considered as having satisfactory levels of daylight in the proposed scenario based on the review of the average daylight factor (ADF) which in all instances is above target levels in the proposed scenario / the retained ADF is adequate compared with target criteria.

20 Station Road (1st & 2nd floors) : We have analysed the two closest windows to the development site (the remainder not considered applicable / to remote for analysis). Our findings for these two windows are similar for the analysis to the neighbouring 16-18 Station Road; there is a reduction in VSC of 45% to the 1st floor window (ref W1) analysed and a reduction of 33% for the 2nd floor window analysed (ref W1). Thus for this tow isolated windows to 20 Station Road, whilst the reduction exceeds the target 20% threshold where beyond, reductions may become 'noticeable' it is anticipated that as 16-18 Station Road, retained ADF is adequate (we cannot confirm actual values as for this particular property, as we have been unable to obtain floor plans / room use confirmation).

30 Station Road (1st 2nd 3rd & 4th floors) : There are reductions in VSC ranging 7% to 16% thus for these windows analysed, these reductions do not exceed the target 20% threshold where beyond, reductions may become 'noticeable'. In summary, the target criteria (VSC) within the BRE Guide proposal is readily met.

Marylebone House, Marketfield (1st 2nd 3rd & 4th floors) : For all of these flats at 2nd floor (lowest residential level), there are reductions in VSC ranging 0% to 18% (with the isolated exception of the two southern / flank windows (ref W5 & W6) which have VSC reductions ranging 48% - 50% although to highlight at 2nd floor there are two further flank windows which we have discounted as they are considered to serve as a secondary window to these rooms). Thus with the exception of window reference W5 / W6 (which are twin windows serving a bedroom ref R2), for these windows analysed, these reductions do not exceed the target 20% threshold where beyond, reductions may become 'noticeable'. In summary, the target criteria (VSC) within the BRE Guide proposal is met for these 2nd floor windows excepting window W5 / W6 (bedroom R2). Given the results for the 2nd floor (VSC reductions ranging 0% -18% exception windows W5 / W6), for review of the 3rd floor, it is only necessary to consider the windows above W5/W6 (namely W1 & W2 – again twin windows serving a bedroom ref R1) on the basis that all other windows would have lesser reductions than the 0% -18% reductions for the corresponding windows one floor lower at the 2nd floor.

For the rooms served by these windows we have also undertaken review of Daylight Distribution (please see next section 4.4), but given the reductions to the southern / end flank twin windows to the bedroom at 2nd & 3rd floor level in terms of VSC and Daylight Distribution, we have undertaken more detailed review of daylight for these particular bedrooms and have calculated the average daylight factor (ADF) which BS 8206-2 sets a value of 1% or above for bedrooms. We set-out below our findings as :-

2nd floor Bedroom ref R2 (served by windows W5 / W6) in the proposed scenario, we have calculated an ADF of 1.43% (target is 1.0% or above).

3rd floor Bedroom ref R1 (served by windows W1 / W2) in the proposed scenario, we have calculated an ADF of 2.36% (target is 1.0% or above).

Thus whilst some daylight reductions may be noticeable (based on VSC and Daylight Distribution) in all instances in the proposed scenario, those rooms that have a noticeable reduction in daylight could still be considered as having satisfactory levels of daylight in the proposed scenario based on the review of the average daylight factor (ADF) which in all instances is above target levels in the proposed scenario / the retained ADF is adequate compared with target criteria.

Thus we submit, therefore, that whilst there are isolated noticeable reductions to 12 windows for all existing residential windows analysed in terms of vertical sky component, that for these particular rooms that these windows serve, they still maintained an adequate level of average daylight factor within in the proposed scenario and on this basis, on balance, there are no “material” effects on the daylight to the surrounding property habitable rooms with the proposals, we do not consider such reduction is detrimental to the light quality within these rooms, given that a reasonable ADF is maintained in the proposed scenario.

4.4 SURROUNDING BUILDINGS (EXISTING) - DAYLIGHT DISTRIBUTION

Using the information previously mentioned, we have derived internal room layouts of the surrounding buildings and prepared a set of daylight distribution or no-sky line calculations both as existing and as proposed to show what effects the proposed new building may have on the surrounding properties in terms of the daylight penetration into those rooms (**Table 2 – Daylight Distribution for surrounding buildings – Appendix 1**).

From this Table 2, it can be seen in terms of the window / rooms analysed, reductions in daylight distribution area fairly minimal and in the majority of cases, do not exceed 20% reduction. There are isolated exceptions relating to 16-18 Station Road (1st floor only – applicable to 2 living rooms and 1 bedroom), 20 Station Road (1st / 2nd floor – assumed two rooms and results anticipated to be similar to that of 16-18 Station Road) and Marylebone House (bedroom to 2nd floor). Given the results to these six rooms, we have undertaken review also of the average daylight factor (ADFs) – please see commentary within section 4.3 of this report.

4.5 SURROUNDING BUILDINGS (CONSENTED NOT YET BUILT) – AVERAGE DAYLIGHT FACTORS (ADF)

We have assessed the proposed new accommodation either currently under construction or yet to be built to assess in the proposed scenario whether the proposed habitable rooms have appropriate daylight by reference to Average Daylight Factors (ADFs). We have assessed the effects of the neighbouring proposed new build blocks at Phoenix Plaza (at on the eastern side of Marketfield Way which is a residential block currently under construction – Planning ref 12/00477F and 14/00846/F). For this block, we have modelled their internal room layouts based on planning portal information (as the ground floor is proposed commercial, this is excluded from assessment – we have analysed residential from 1st floor and above).

The average daylight factor is a measurement of the VSC at the window face combined with the average reflectances of the surfaces inside the room, the area of the glazing and size of the room. This gives a more detailed assessment for the light that will be available in the space as opposed to VSC which gives details of the potential for reasonable daylighting within the space rather than an actual measure of the internal effects. BS 8206 Pt2, which is incorporated into the BRE Guide, recommends that interiors intended to have supplementary electric lighting – in other words, normal building interiors – should have an ADF of 2%. The BS sets minimum standards of 1% for bedrooms, 1.5% for living rooms and 2% for kitchens.

In terms of the open-plan arrangements for ‘kitchen/ living/ dining room’, we have taken the target ADF for the predominant room use which being primarily ‘living/ dining room’, we have allowed a target ADF of 1.5%.

The results of our analysis review of ADF for proposed habitable rooms (yet to be built / completed) with windows facing or closest to the proposed development are set out in **Table 3 : Surrounding Buildings – Proposed New Builds – Average Daylight Factor (ADF) (see Appendix 1)**. We comment as follows;

Phoenix Plaza

We have reviewed floors 1st to 4th and have analysed on the basis of all balcony projections removed as some isolated rooms *without* consideration on the Marketfield Way proposal appear not to achieve target ADF levels in some instances (and thus would continue not achieve these level with the analysis in the proposed scenario with the Marketfield Way proposal in situ). In summary, it is inherent design within Phoenix Plaza with the balconies reducing daylight flow to some rooms below the desired ADF target as opposed to the proposal of the Marketfield development as when analysis is undertaken ‘without balconies’ to Phoenix Plaza, the appropriate target values for ADFs is achieved, in the proposed scenario.

In summary, there is no adverse effect on the ADFs to Phoenix Plaza resulting directly from the proposed development (it is the inherent balcony positions which result in any isolated aspects in terms of daylight).

As a final consideration, Section 2.3 of the BRE Guide states that consideration should also be given to 'Adjoining Land Development' in that a 'mirror image' in theory of Phoenix Plaza could equitably be considered for any potential development at the car park site off Marketfield Way. Clearly, the development at Phoenix Plaza is significant and should have considered proportional development of a new build on the site of the car park off Marketfield Way in order to avoid potential limitation within the inherent design of Phoenix Plaza with the assumption that no development opposite is to occur; clearly it seems inequitable for the new build development at Phoenix Plaza in terms of daylight/sunlight to simply assume no development will occur on the land opposite and hence mirror development within the BRE Guide should be considered as to each site taking only a fair amount of proportionate daylight/sunlight as applicable. The concept of mirror development is graphically illustrated within figure 22 below.

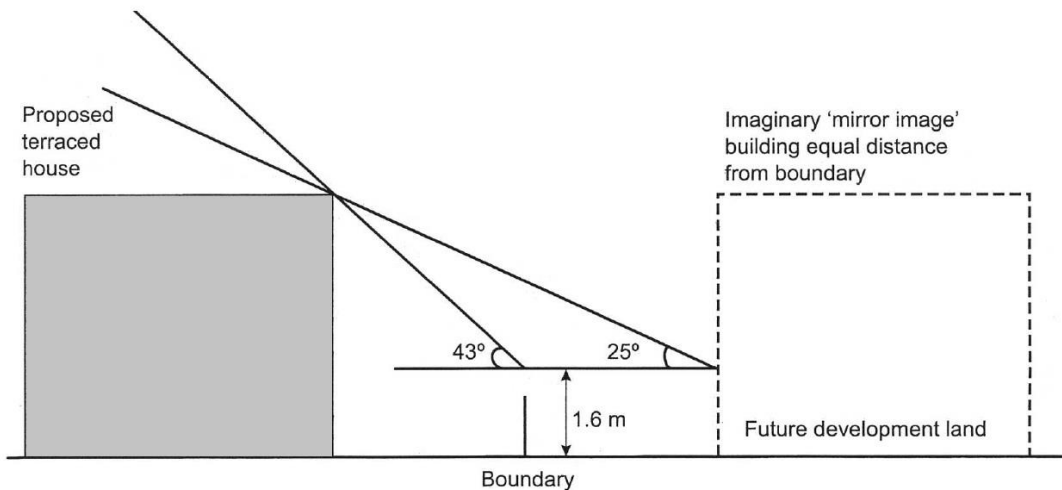


Figure 22: Derivation of an angular boundary criterion to safeguard future development of adjoining land

Figure 22 Courtesy of BRE Site Layout Planning for Daylight and Sunlight – A guide to good practice depicting mirror development.

Notwithstanding comments in respect of mirror development, we conclude that on balance there are no material adverse effects on daylight and sunlight to the neighbouring property in closest proximity resulting from this proposal (i.e. neighbouring property at Phoenix Plaza – elevation on Marketfield Way).

4.6 SURROUNDING BUILDINGS – SUNLIGHT

On sunlight, only the windows that face within 90° of South, that is to say, facing from 90° to 270°, are normally considered under the sunlight criteria. We have, therefore, assessed the windows with this orientation. Within **Table 1 (VSC and sunlight for surrounding buildings)**, the windows that face within 90° of north, which is to say, from 270° to 360° and from 360° to 90°, which are marked as “north” are north facing and these windows are not, therefore, considered for sunlight.

The BRE recommendation is that windows facing within 90° of south should have 25% of annual probable hours with 5% in the winter months (from the autumn equinox to the spring equinox). Where reductions below the recommended levels are contemplated, these should be target limited to one fifth or 0.2 times the present value (unless a reduction of sunlight received over the whole year is not greater than 4% of annual probable sunlight hours).

To highlight, analysis review of windows primarily relates to main living rooms and conservatories i.e. sun important rooms as per the BRE Guide (although as we cannot be certain on all room usage to all neighbouring rooms in all instances, for completeness / ease, we have generally analysed all windows for sunlight review).

As can be seen from **Table 1 (Appendix 1)**, in terms of sunlight, all the windows to the surrounding neighbouring windows assessed (that face within 90° of South) do not have any reductions of greater than 20% of former value where they have a proposed value below 25% APSH (5% winter) in terms of sunlight, for windows anticipated to be serving living rooms with the exception of winter sun reduction to the two 1st floor living rooms within 16-18 Station Road whereby these achieve winter sun hours of 4% (just below target of 5%). In addition, if the 1st floor room closest within 20 Station Road is a living room, this would have a significant reduction in winter sun to 1% although the main annual probable sunlight hours (APSHs) would remain above target.

In summary, the proposed development does not result in any material reductions to sunlight in reference of the BRE Guide for those windows definitely considered to serve living rooms with the isolated exception of up to 3 living rooms where there are reductions in winter sun (although given that the APSH is maintained, we consider on balance, reasonable given all the surrounding neighbouring residential properties considered.)

4.7 SUN ON THE GROUND AND SHADOWING

Shadow Paths

The BRE Guide recommends that surrounding gardens / amenity spaces should also be considered for shadowing from the proposals. The BRE target criteria for garden / amenity spaces is that at the Equinox, such spaces will have the ability to receive sunlight to over 50% of the area for 2 hours or more (and if less than that as existing, not to have a target reduction that would exceed 20% reduction of the former in the proposed scenario).

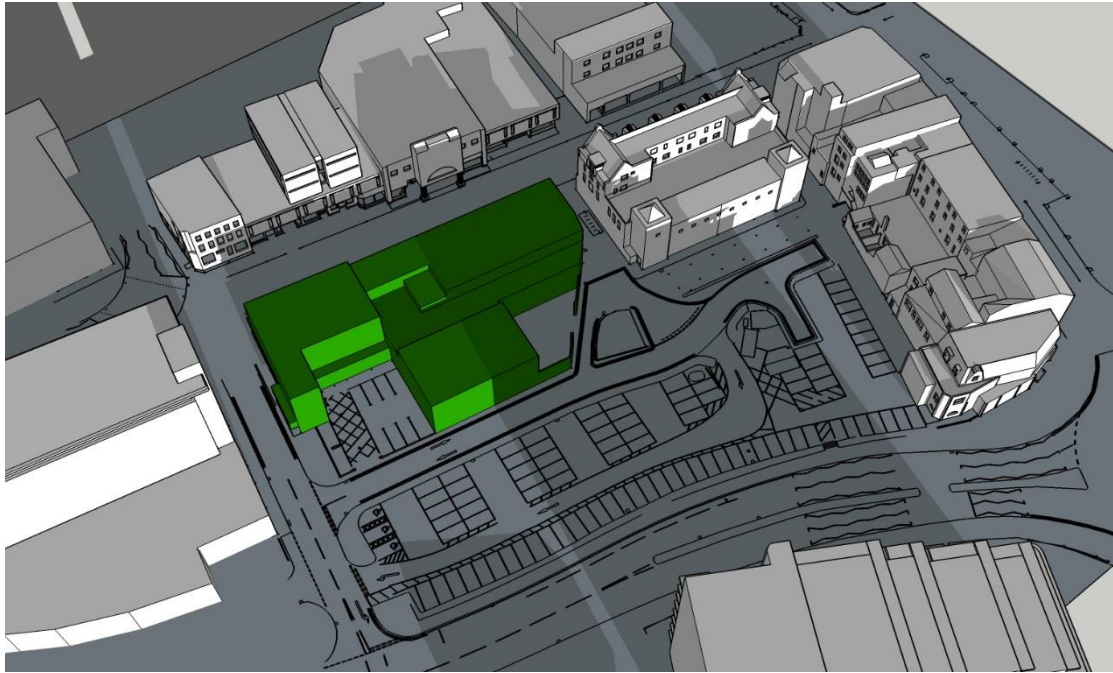
There appears to be no formal amenity / rear garden areas to the surrounding properties. However, there are some drying / amenity areas to the rooftop above the commercial units (at 2nd floor level) to Marylebone House and also sunlight will be desired to the pedestrianised High Street.

For visual representation, we set-out in the following pages, a series of images as existing and as proposed, taken at two-hourly intervals through the day on the Equinox, to depict the cast of the shadows pictorially.

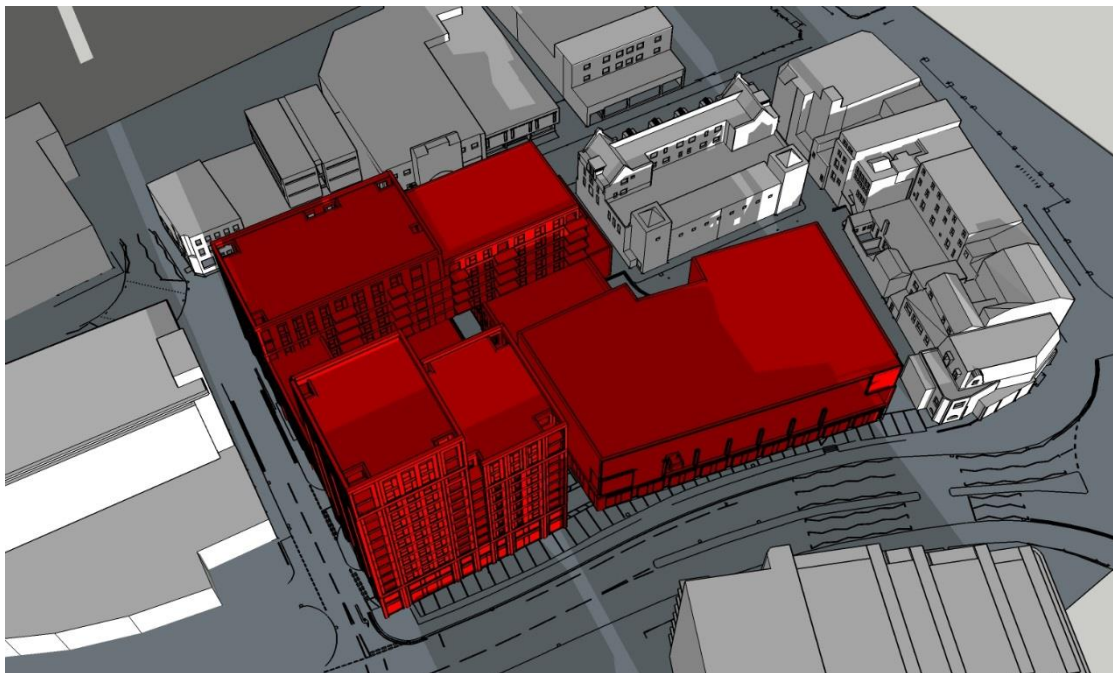
As can be seen from the sequence, there will be some slight increase in shadowing to the pedestrianised High Street during the morning (the increase being limited as the existing massing already results in a fairly significant amount shadowing in the morning). After morning there is effectively no meaningful shadowing at the equinox to the High Street resulting from the proposals. In respect of the drying / amenity areas to the rooftop above the commercial units (at 2nd floor level) to Marylebone House as per the shadow plots, there is no significant impact in terms of shadowing / no significant increase at the equinox (the amenity area would still readily satisfy the BRE Guide by having the ability to receive more than 2 hours of sun on the ground for more than half the amenity area at the Equinox; or not less than 20% reduction to former, if already less than 50% of the garden had the ability to receive sunlight currently / existing, at the equinox).

It is important to state that whilst the above highlights some shadowing change to some neighbouring properties, this is obviously transient shadowing and any increase in shadowing is for limited parts of the day. The shadow path is ordinarily considered for amenity areas only – this is different to calculation of available sunlight hours to neighbouring windows which is covered in **section 4.6 of this report**.

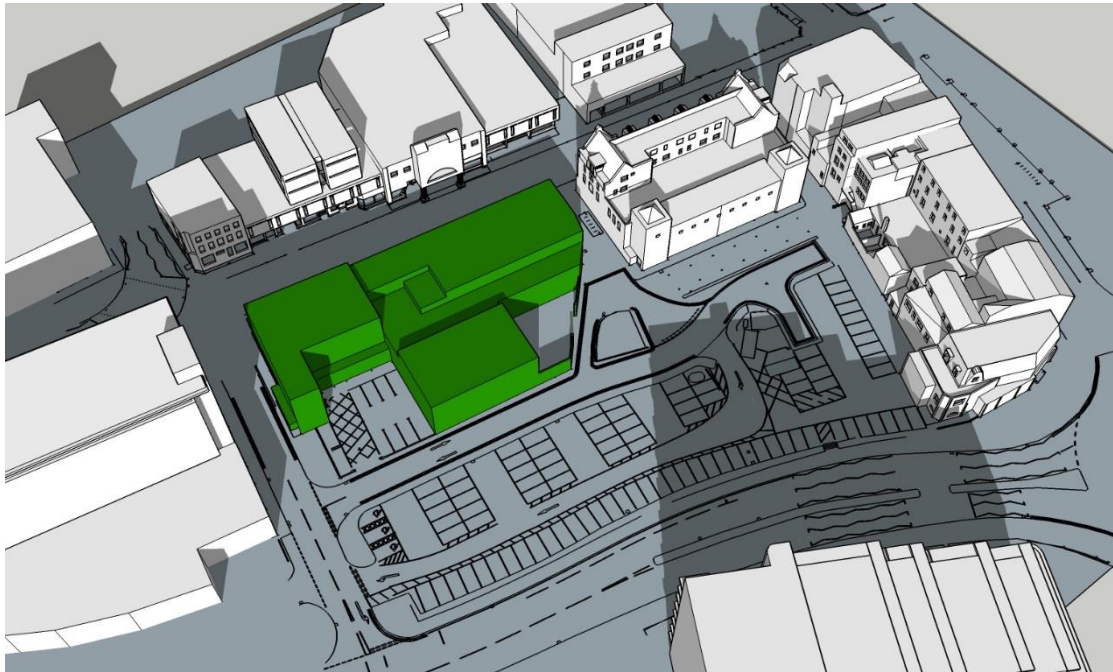
In summary, the proposals satisfy the BRE Guide target criteria / there is no material effect.



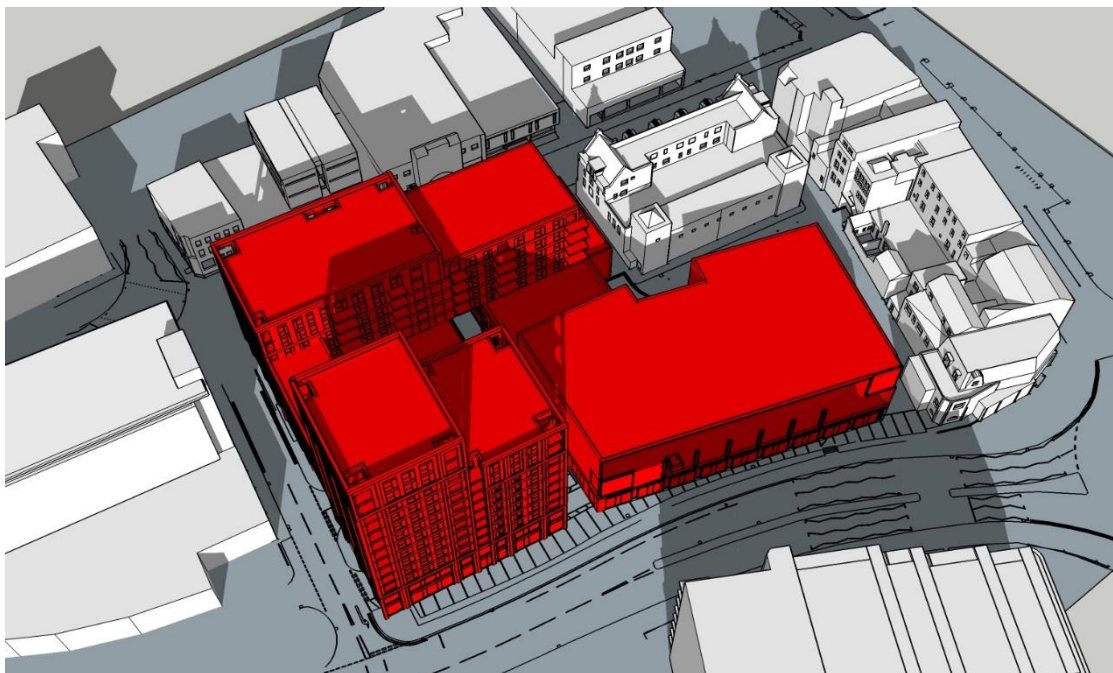
Shadow Diagram - 07.00 hours as existing on the Equinox



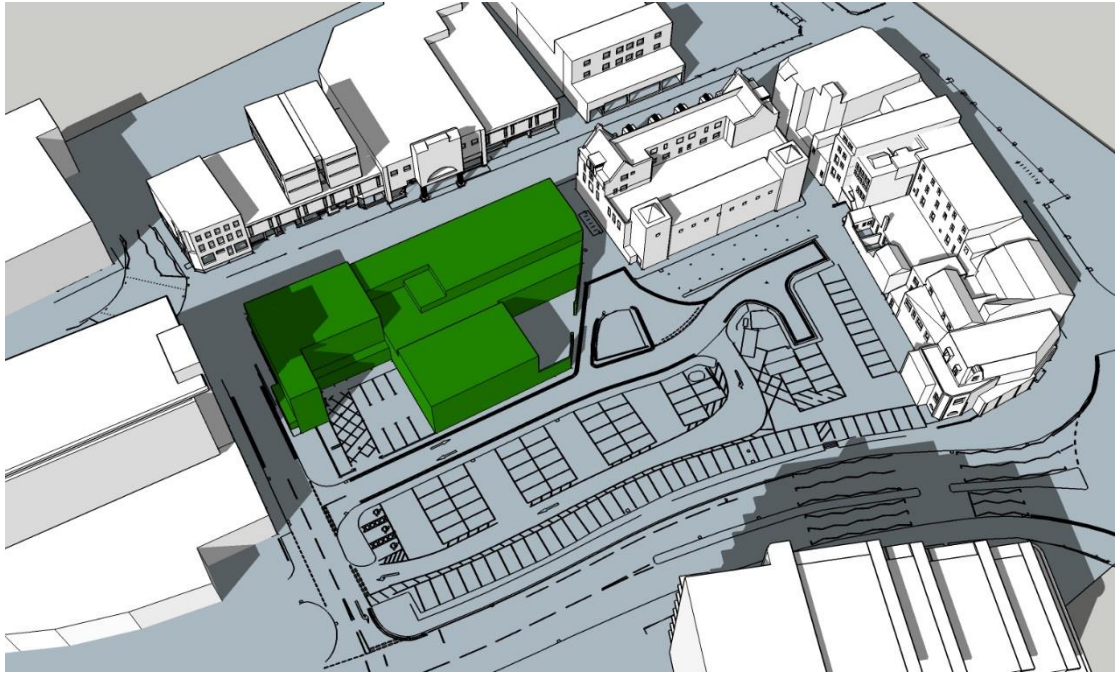
Shadow Diagram - 07.00 hours as proposed on the Equinox



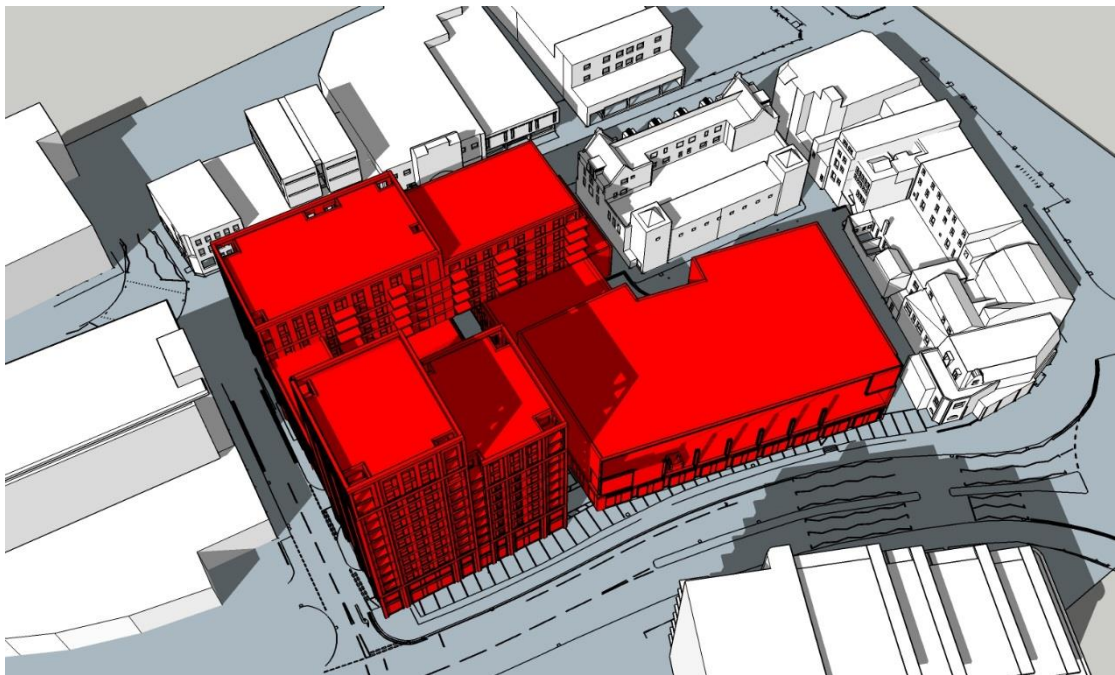
Shadow Diagram - 09.00 hours as existing on the Equinox



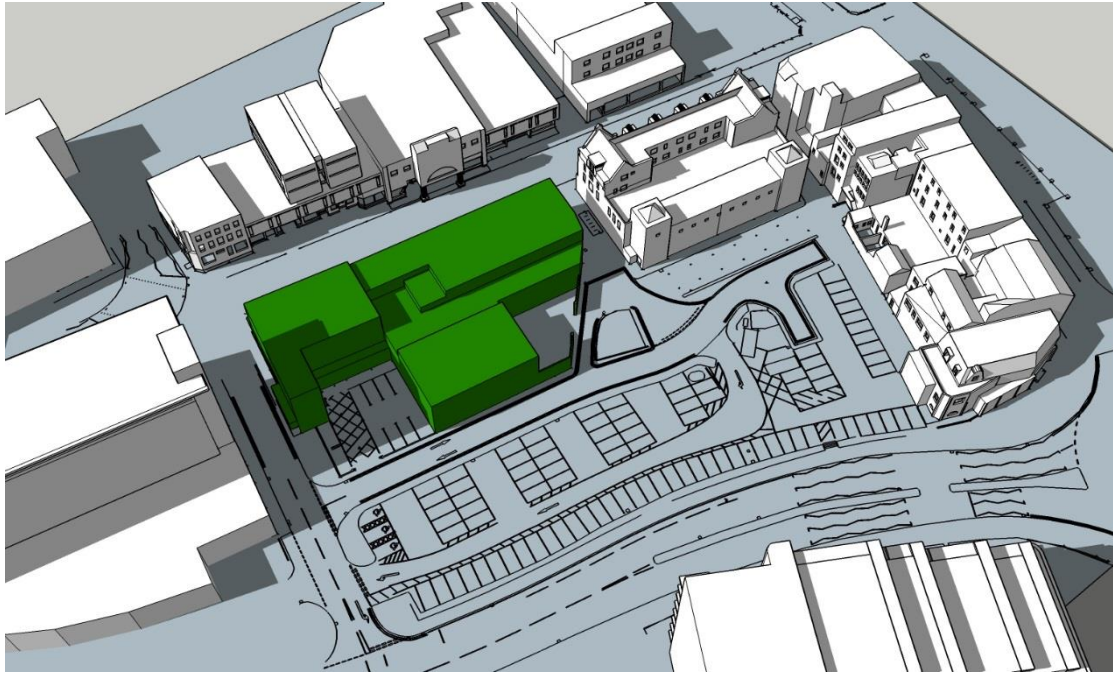
Shadow Diagram - 09.00 hours as proposed on the Equinox



Shadow Diagram - 11.00 hours as existing on the Equinox



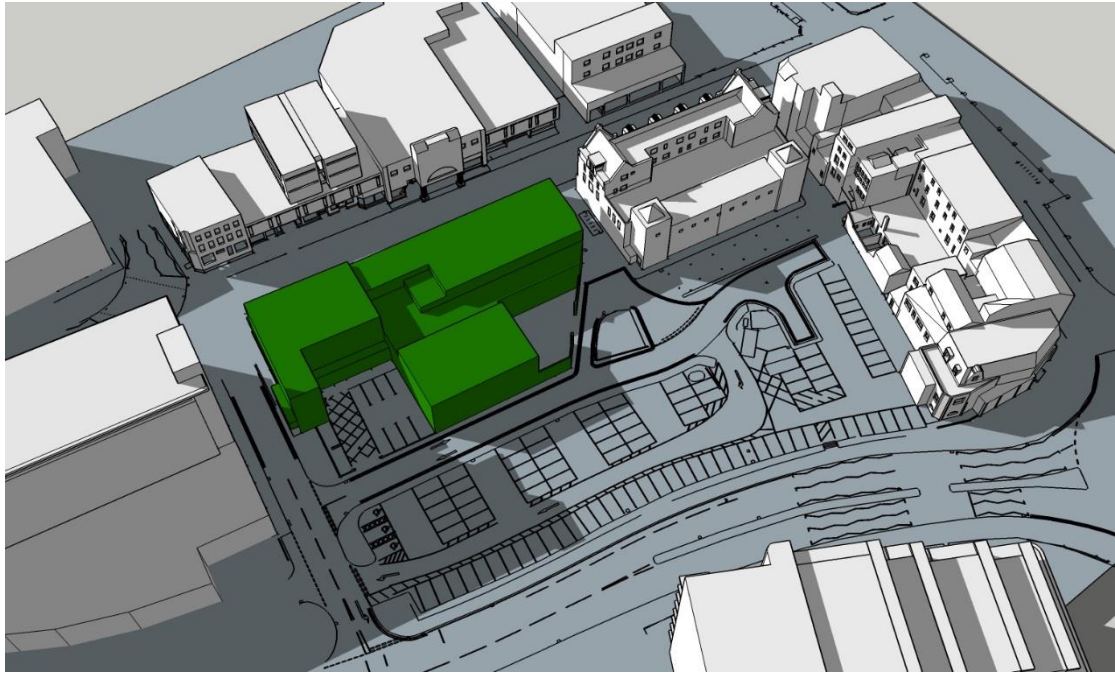
Shadow Diagram - 11.00 hours as proposed on the Equinox



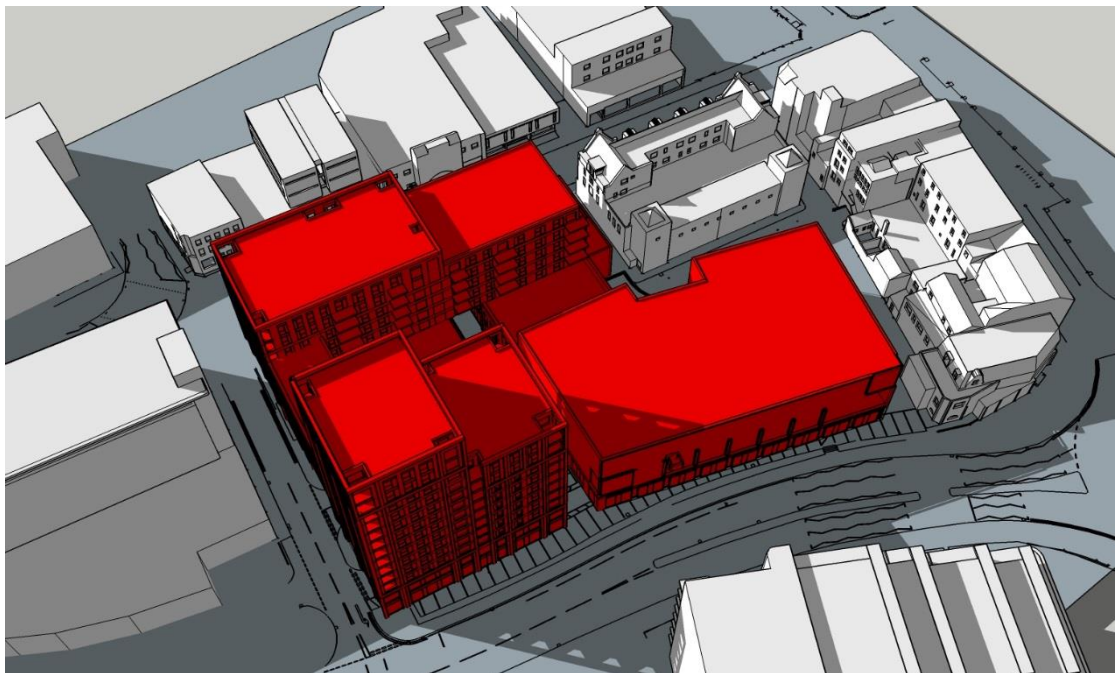
Shadow Diagram - 13.00 hours as existing on the Equinox



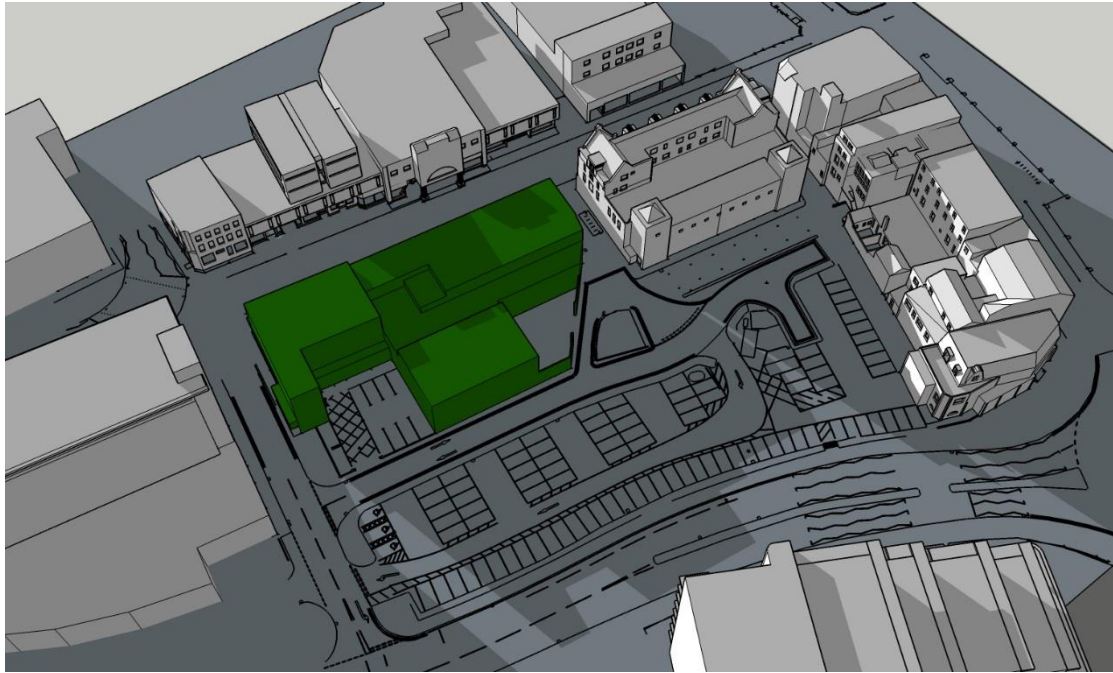
Shadow Diagram - 13.00 hours as proposed on the Equinox



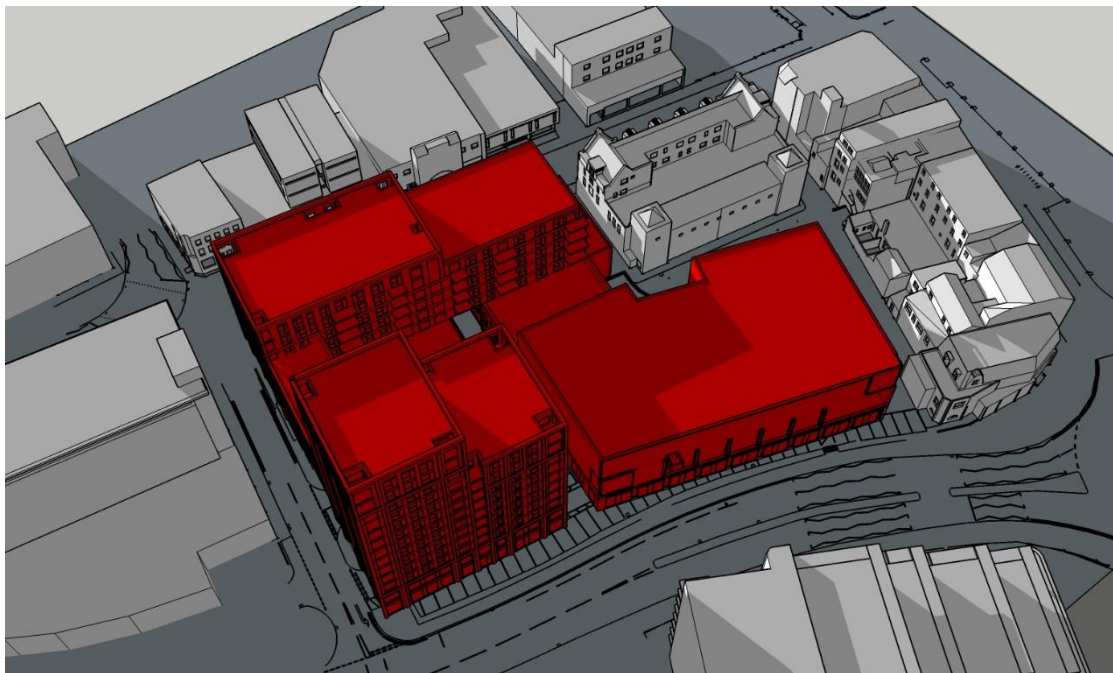
Shadow Diagram - 15.00 hours as existing on the Equinox



Shadow Diagram - 15.00 hours as proposed on the Equinox



Shadow Diagram - 17.00 hours as existing on the Equinox



Shadow Diagram - 17.00 hours as proposed on the Equinox

4.8 PROPOSED NEW BUILDING – AVERAGE DAYLIGHT FACTOR (ADFs)

We have assessed the proposed new accommodation to determine whether or not the proposed spaces will be provided with adequate daylight by reference to Average Daylight Factors (ADFs). The average daylight factor is a measurement of the VSC at the window face combined with the average reflectances of the surfaces inside the room, the area of the glazing and size of the room. This gives a more detailed assessment for the light that will be available in the space than the more simplistic measure of VSC which gives details of the potential for reasonable daylighting within the space rather than an actual measure of the internal effects. BS 8206 Pt2, which is incorporated into the BRE Guide, recommends that interiors intended to have supplementary electric lighting – in other words, normal building interiors – should have an ADF of 2%. The BS sets minimum standards of 1% for bedrooms, 1.5% for living rooms and 2% for kitchens.

In terms of the open-plan arrangements for 'kitchen/ living/ dining room', we have taken the target ADF for the predominant room use which being primarily 'living/ dining room', we have allowed a target ADF of 1.5%.

We have analysed all habitable rooms on the lowest two floors on the basis that beyond this level, ADFs will only continue to improve yet further with increases in height / storey (and for any significant layout changes above, we have also spot-checked to ensure results do not worsen as a result of such layout changes). The results of this analysis are set out in **Table 4 – Proposed New Building - Self-test ADFs** in Appendix 3 (along with an Internal Room Map for reference). Examination of **Table 4 – Proposed New Building - ADFs** shows that all the proposed rooms meet the ADF target criteria and indeed, the majority exceed the target by a considerable margin with the isolated exception of 3 bedrooms and 1 living room (the latter being at an ADF of 1.3% compared to target of 1.5% for living rooms). Given the urban context, it is invariable that some isolated rooms do not meet the ADF target criteria due to a combination of all other design constraints and influences; we consider that this particular design readily achieves good daylighting especially in view of the urban context.

In summary, therefore, the development meets performs well compared with the recommendations / target criteria in both the BRE Guide and as also set within BS 8206-2 in terms of ADF.

4.8 PROPOSED NEW BUILDING – SUNLIGHT & AMENITY AREA

We have assessed the sunlight reaching windows which face within 90° of South within the new dwellings. The BRE Guide only requires assessments to be made of living rooms (and conservatories although not applicable in this scheme) and those windows or the applicable orientation.

The BRE Guide recommends that living rooms should have an availability of 25% of annual probable sunlight hours and with 5% available in the winter months but for new development group dwellings, this is an aim and not a requirement for all dwellings.

As for ADF review, we have analysed applicable living rooms to units in the development on the lowest floor (on the basis that above this floor, some betterment could be anticipated), for sunlight availability. However, we highlight that in reference to the BRE Guide, the target criteria may not always be met as *for new development group dwellings (i.e. multi-unit development), this is an aim and not a requirement for all dwellings due to inevitable site constraints.*

Examination of **Table 5 – Proposed New Dwellings – Sunlight** in Appendix 3 (along with an Internal Room Map for reference) shows that on balance, for all living rooms applicable, they receive reasonable levels of sunlight availability given the site orientation.

In terms of sunlight to new build's proposed amenity space we have reviewed the designated amenity area at ground floor. The results are contained and visually depicted in Image No. 1 – Shadowing Review / Sun on the Ground to Proposed Building – ground floor amenity (outlined in blue) in which the area receiving more than 2 hours sunlight on the Equinox is the non-shaded area (hatched areas not receiving the 2 hours are shown hatched purple).

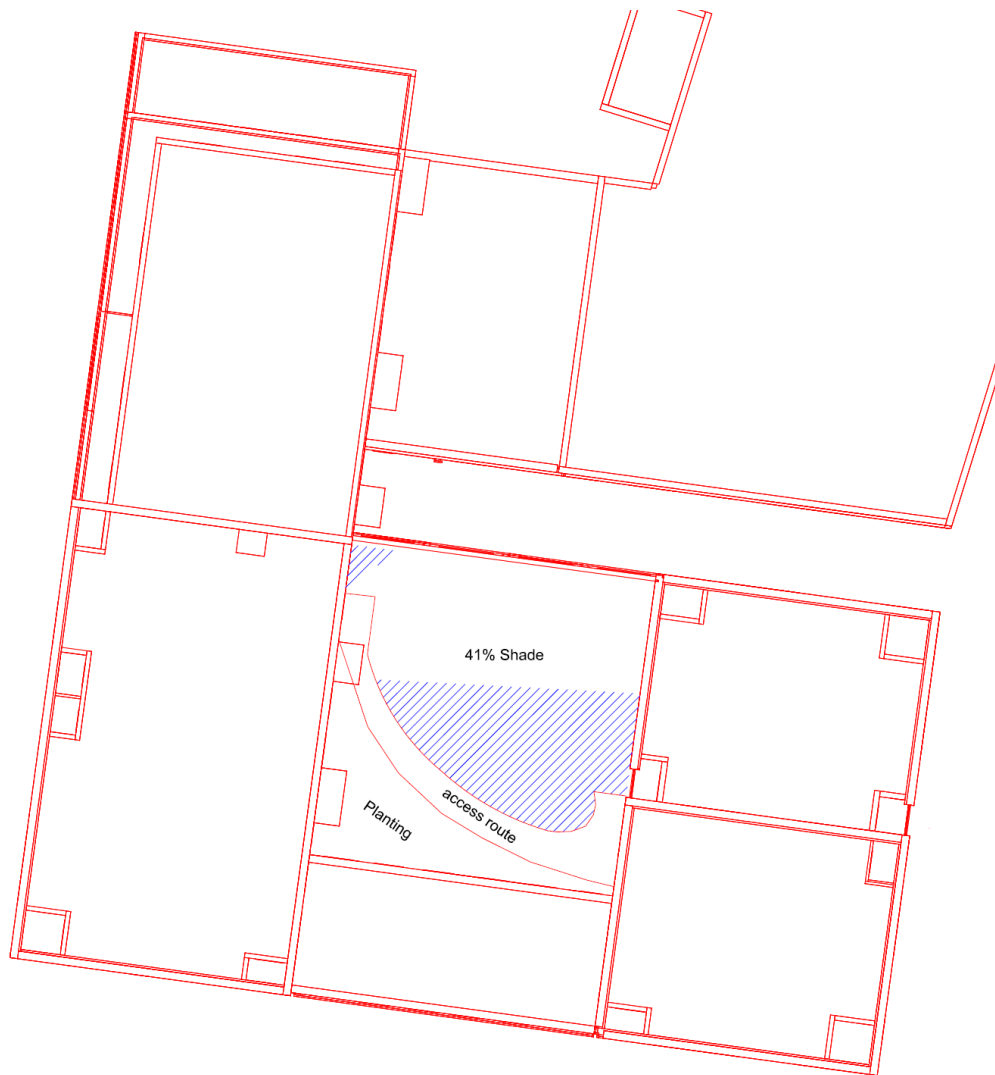


Image No 1 – Shadowing Review/Sun on the Ground to Proposed Building – Amenity (Level 2)

From this analysis, the proposed amenity area demarked at Level 2 (Image No 1) has the ability to receive 59% amenity area for the 2 hours of sunlight at the Equinox (41% shaded) thus for this designated amenity area with over half the area having the ability to receive 2 hours of sunlight at the Equinox, the target criteria within the BRE Guide is met.

5.0 CONCLUSION

The results of our examination show that for the neighbouring habitable windows / rooms analysed, provision of reasonable daylight / sunlight is still maintained in the proposed scenario / these generally satisfy on balance, the target requirements of the BRE Guide for an urban context, in terms of daylight and sunlight in the proposed situation / there is no significant adverse material effect.

Equally in terms of shadowing / sun on the ground, the proposal does not result in any significant adverse effect / generally follows the BRE Guide target criteria.

Therefore, we consider that the results of this analysis show that the amenities of daylight and sunlight will, be suitably maintained to neighbouring habitable rooms and sunlight to amenity areas.

For the new-build habitable rooms, we conclude that daylight (ADFs) within the proposed habitable rooms are adequate largely meet / exceed the target criteria set within BS 8206-2 and BRE publication "Site Layout Planning for Daylight & Sunlight – A guide to good practice" and that reasonable sunlight is provided to living rooms (for applicable orientation) and also to the amenity area.

Schroeders Begg Ltd

April 2016

APPENDICES

APPENDIX 1 -

Table 1 - VSC and Sunlight for surrounding buildings

Table 2 - Daylight Distribution for surrounding buildings

Table 3 – ADF for surrounding buildings consented buildings (not yet built)

APPENDIX 2 –

3D Massing Drawings & Window reference for Surrounding Buildings

APPENDIX 3 –

Proposed New Building:-

Self-test ADFs (Table 4)

Self-test Sunlight (Table 5)

Internal Room Map for reference

APPENDIX 1 -

Table 1 - VSC and Sunlight for surrounding buildings

Table 2 - Daylight Distribution for surrounding buildings

Table 3 – ADF for surrounding buildings consented buildings (not yet built)

Table 1 - VSC & Sunlight for surrounding buildings

Floor Ref.	Room Ref.	Room Use.	Window Ref.	Scenario	VSC	Difference	Available Sunlight Hours			
							Annual %	Diff	Winter %	Diff
16 to 18 Station Rd										
First	R1	Living Room	W1	Existing	35.21	0.51	79	0.66	24	0.17
				Proposed	18.03		52		4	
First	R1	Living Room	W2	Existing	35.12	0.51	78	0.65	23	0.13
				Proposed	17.83		51		3	
First	R2	Living Room	W3	Existing	34.99	0.51	79	0.66	24	0.17
				Proposed	17.76		52		4	
First	R3	Bedroom	W4	Existing	34.16	0.51	77	0.66	21	0.10
				Proposed	17.42		51		2	
Second	R1	Living Room	W1	Existing	36.48	0.74	82	0.87	28	0.61
				Proposed	27.14		71		17	
Second	R1	Living Room	W4	Existing	14.67	1.00		*North*		*North*
				Proposed	14.67					
Second	R1	Living Room	W5	Existing	17.51	1.00		*North*		*North*
				Proposed	17.51					
Second	R2	Bedroom	W2	Existing	36.13	0.73	79	0.84	25	0.48
				Proposed	26.4		66		12	
Second	R3	Bedroom	W3	Existing	34.69	0.72	72	0.85	21	0.48
				Proposed	25.02		61		10	
20 Station Rd										
First	R1	Kitchen	W1	Existing	27.73	0.55	48	0.63	16	0.06
				Proposed	15.36		30		1	
Second	R1	Living Room	W1	Existing	35.13	0.67	75	0.80	21	0.29
				Proposed	23.5		60		6	
30 Station Rd										
First	R1	Bedroom	W1	Existing	25.14	0.84	61	0.90	17	0.65
				Proposed	21.13		55		11	
First	R2	Living Room	W2	Existing	27.77	0.84	65	0.89	19	0.63
				Proposed	23.29		58		12	
Second	R1	Bedroom	W1	Existing	31.18	0.90	74	0.95	19	0.79
				Proposed	28.15		70		15	
Second	R2	Living Room	W2	Existing	32.83	0.90	77	0.94	22	0.77
				Proposed	29.43		72		17	
Third	R1	Bedroom	W1	Existing	36.1	0.93	83	0.99	26	0.96
				Proposed	33.58		82		25	
Third	R2	Living Room	W2	Existing	36.46	0.92	82	0.99	25	0.96
				Proposed	33.45		81		24	
Fourth	R1	Living Room	W1	Existing	38.17	0.94	87	0.99	30	0.97
				Proposed	35.83		86		29	
Fourth	R2	Bedroom	W2	Existing	38.23	0.94	86	0.99	29	0.97
				Proposed	35.79		85		28	

Table 1 - VSC & Sunlight for surrounding buildings

Floor Ref.	Room Ref.	Room Use.	Window Ref.	Scenario	VSC	Difference	Available Sunlight Hours			
							Annual %	Diff	Winter %	Diff
Marylebone House										
Second	R1	Living Room	W1	Existing	35.29					
				Proposed	35.29	1.00		*North*	*North*	
Second	R1	Living Room	W2	Existing	37.83					
				Proposed	37.83	1.00		*North*	*North*	
Second	R1	Living Room	W3	Existing	35.09		49		14	
				Proposed	34.4	0.98	48	0.98	13	
Second	R1	Living Room (secondary window)	W4	Existing	36.3		86		27	
				Proposed	21.27	0.59	59	0.69	9	
Second	R2	Bedroom	W5	Existing	36.22		86		27	
				Proposed	18.74	0.52	53	0.62	6	
Second	R2	Bedroom	W6	Existing	36.23		86		28	
				Proposed	17.99	0.50	52	0.60	6	
Second	R3	Unknown (secondary window / non-hab)	W7	Existing	36.16		86		28	
				Proposed	16.4	0.45	51	0.59	6	
Second	R4	Bedroom	W8	Existing	32.87		50		17	
				Proposed	27.07	0.82	30	0.60	1	
Second	R4	Bedroom	W9	Existing	33.21		49		16	
				Proposed	27.44	0.83	33	0.67	2	
Second	R5	Bedroom	W10	Existing	28.92		25		2	
				Proposed	26.66	0.92	23	0.92	1	
Second	R6	Bedroom	W11	Existing	33.73		44		7	
				Proposed	30.9	0.92	40	0.91	4	
Second	R7	Bathroom	W12	Existing	34.95		48		11	
				Proposed	31.79	0.91	44	0.92	7	
Second	R8	Bathroom	W13	Existing	34.93		48		12	
				Proposed	31.75	0.91	44	0.92	8	
Second	R9	Bedroom	W14	Existing	33.57		49		13	
				Proposed	30.57	0.91	45	0.92	9	
Second	R10	Bedroom	W15	Existing	27.56		49		13	
				Proposed	24.89	0.90	45	0.92	9	
Third	R1	Unknown	W1	Existing	38.03		88		29	
				Proposed	21.95	0.58	61	0.69	8	
Third	R1	Unknown	W2	Existing	38.05		88		29	
				Proposed	20.98	0.55	61	0.69	8	
Third	R2	Bedroom	W3	Existing	37.45		55		17	
				Proposed	32.22	0.86	42	0.76	4	

Table 2 - Daylight Distribution for surrounding buildings

Floor	Room	Room Use.	Room Area	Lit Area Existing	Lit Area Proposed	Difference
16 to 18 Station Rd						
First	R1	Living Room	19.74	19.69 99.76%	9.29 47.07%	0.47
First	R2	Living Room	19.67	19.60 99.63%	5.57 28.33%	0.28
First	R3	Bedroom	10.12	9.67 95.54%	4.81 47.52%	0.50
Second	R1	Living Room	20.83	20.33 97.58%	19.72 94.67%	0.97
Second	R2	Bedroom	9.84	9.10 92.53%	7.86 79.88%	0.86
Second	R3	Bedroom	10.58	10.15 95.94%	8.88 83.96%	0.88
20 Station Rd						
First	R1	Kitchen	18.76	16.82 89.64%	6.73 35.90%	0.40
Second	R1	Living Room	18.76	17.08 91.03%	8.81 46.96%	0.52
30 Station Rd						
First	R1	Bedroom	8.23	7.72 93.75%	7.70 93.51%	1.00
First	R2	Living Room	11.78	8.31 70.51%	7.08 60.07%	0.85
Second	R1	Bedroom	8.23	8.13 98.73%	8.12 98.71%	1.00
Second	R2	Living Room	11.78	9.68 82.18%	8.91 75.66%	0.92
Third	R1	Bedroom	8.23	8.06 97.92%	8.06 97.90%	1.00
Third	R2	Living Room	11.78	10.53 89.36%	10.52 89.29%	1.00
Fourth	R1	Living Room	14.28	14.20 99.43%	13.93 97.53%	0.98
Fourth	R2	Bedroom	7.79	7.66 98.32%	7.66 98.32%	1.00
Marylebone House						
Second	R1	Living Room	29.08	28.76 98.89%	28.46 97.86%	0.99
Second	R2	Bedroom	9.19	8.85 96.30%	5.87 63.84%	0.66
Second	R3	Secondary / Non-hab	4.85	3.84 79.19%	3.21 66.22%	0.84
Second	R4	Bedroom	10.62	10.56 99.43%	10.55 99.33%	1.00
Second	R5	Bedroom	7.94	7.63 96.04%	7.63 96.04%	1.00
Second	R6	Bedroom	7.94	7.82 98.52%	7.82 98.52%	1.00
Second	R7	Bathroom	3.42	3.32 97.09%	3.32 97.08%	1.00
Second	R8	Bathroom	3.42	3.32 97.07%	3.32 97.07%	1.00
Second	R9	Bedroom	7.94	7.81 98.38%	7.81 98.37%	1.00
Second	R10	Bedroom	7.94	7.51 94.53%	7.50 94.51%	1.00
Third	R1	Bedroom	9.19	9.06 98.63%	7.25 78.86%	0.80
Third	R2	Bedroom	13.69	11.24 82.09%	11.08 80.97%	0.99

Table 3 - ADF for surrounding buildings not yet built

Floor	Room	Room Use	Window	ADF Existing	ADF Proposed	Target Value	Difference
Phoenix Plaza							
First	R1	Bedroom	W1-L	0.10	0.09	1	0.89
			W1-U	1.26	1.12		
				1.36	1.21		
First	R2	Bedroom	W2-L	0.13	0.11	1	0.92
			W2-U	1.57	1.44		
				1.69	1.56		
First	R3	Living Room	W3-L	0.17	0.15	1.5	0.91
			W3-U	2.09	1.90		
				2.26	2.05		
First	R4	Bedroom	W4-L	0.14	0.12	1	0.90
			W4-U	1.72	1.54		
				1.86	1.67		
First	R5	Bedroom	W5-L	0.16	0.14	1	0.89
			W5-U	1.96	1.74		
				2.12	1.88		
First	R6	Living Room	W6-L	0.17	0.15	1.5	0.87
			W6-U	2.18	1.91		
				2.36	2.06		
First	R7	Living Room	W7-L	0.17	0.15	1.5	0.86
			W7-U	2.18	1.88		
				2.35	2.03		
First	R8	Bedroom	W8-L	0.16	0.13	1	0.85
			W8-U	1.95	1.66		
				2.11	1.80		
First	R9	Bedroom	W9-L	0.14	0.11	1	0.84
			W9-U	1.71	1.44		
				1.84	1.56		
First	R10	Bedroom	W10-L	0.26	0.21	1	0.84
			W10-U	3.21	2.71		
				3.46	2.92		
First	R11	Bedroom	W11-L	0.21	0.18	1	0.88
			W11-U	2.59	2.29		
				2.79	2.47		
First	R12	Bedroom	W12-L	0.12	0.09	1	0.78
			W12-U	1.50	1.16		
				1.62	1.25		
First	R13	Bedroom	W13-L	0.14	0.11	1	0.77
			W13-U	1.79	1.37		
				1.93	1.48		
First	R14	Living Room	W14-L	0.17	0.12	1.5	0.75
			W14-U	2.08	1.55		
				2.24	1.68		
Second	R1	Bedroom	W1-L	0.10	0.09	1	0.91
			W1-U	1.29	1.17		
				1.39	1.26		
Second	R2	Bedroom	W2-L	0.13	0.12	1	0.94
			W2-U	1.61	1.51		
				1.73	1.62		
Second	R3	Living Room	W3-L	0.17	0.16	1.5	0.93
			W3-U	2.15	1.99		
				2.32	2.15		
Second	R4	Bedroom	W4-L	0.14	0.13	1	0.92
			W4-U	1.77	1.62		
				1.91	1.75		
Second	R5	Bedroom	W5-L	0.16	0.14	1	0.91
			W5-U	2.01	1.83		
				2.17	1.97		
Second	R6	Living Room	W6-L	0.18	0.16	1.5	0.90
			W6-U	2.24	2.01		
				2.42	2.17		
Second	R7	Living Room	W7-L	0.18	0.16	1.5	0.89
			W7-U	2.23	1.98		
				2.41	2.14		
Second	R8	Bedroom	W8-L	0.16	0.14	1	0.88
			W8-U	2.00	1.76		
				2.16	1.90		
Second	R9	Bedroom	W9-L	0.14	0.12	1	0.87
			W9-U	1.75	1.53		
				1.89	1.65		
Second	R10	Bedroom	W10-L	0.26	0.23	1	0.88
			W10-U	3.28	2.87		
				3.54	3.10		
Second	R11	Bedroom	W11-L	0.21	0.19	1	0.92
			W11-U	2.63	2.41		
				2.84	2.60		
Second	R12	Bedroom	W12-L	0.12	0.10	1	0.81
			W12-U	1.53	1.24		
				1.65	1.34		
Second	R13	Bedroom	W13-L	0.15	0.11	1	0.80
			W13-U	1.83	1.46		
				1.98	1.58		
Second	R14	Living Room	W14-L	0.17	0.13	1.5	0.78
			W14-U	2.13	1.66		
				2.30	1.79		
Third	R1	Bedroom	W1-L	0.11	0.10	1	0.92
			W1-U	1.32	1.22		
				1.43	1.32		

Table 3 - ADF for surrounding buildings not yet built

Floor	Room	Room Use	Window	ADF Existing	ADF Proposed	Target Value	Difference
Third	R2	Bedroom	W2-L	0.13	0.12	1	0.95
			W2-U	1.66	1.58		
				1.79	1.70		
Third	R3	Living Room	W3-L	0.18	0.16	1.5	0.94
			W3-U	2.21	2.09		
				2.39	2.25		
Third	R4	Bedroom	W4-L	0.14	0.13	1	0.94
			W4-U	1.81	1.70		
				1.95	1.83		
Third	R5	Bedroom	W5-L	0.16	0.15	1	0.93
			W5-U	2.06	1.92		
				2.22	2.07		
Third	R6	Living Room	W6-L	0.18	0.17	1.5	0.92
			W6-U	2.29	2.11		
				2.47	2.27		
Third	R7	Living Room	W7-L	0.18	0.16	1.5	0.92
			W7-U	2.28	2.09		
				2.46	2.25		
Third	R8	Bedroom	W8-L	0.16	0.15	1	0.91
			W8-U	2.04	1.85		
				2.20	2.00		
Third	R9	Bedroom	W9-L	0.14	0.13	1	0.90
			W9-U	1.78	1.61		
				1.92	1.74		
Third	R10	Bedroom	W10-L	0.27	0.24	1	0.91
			W10-U	3.33	3.03		
				3.60	3.27		
Third	R11	Bedroom	W11-L	0.21	0.20	1	0.95
			W11-U	2.67	2.53		
				2.88	2.73		
Third	R12	Bedroom	W12-L	0.12	0.10	1	0.85
			W12-U	1.55	1.32		
				1.68	1.43		
Third	R13	Bedroom	W13-L	0.15	0.12	1	0.83
			W13-U	1.86	1.56		
				2.01	1.68		
Third	R14	Living Room	W14-L	0.17	0.14	1.5	0.81
			W14-U	2.17	1.76		
				2.34	1.90		
Fourth	R1	Bedroom	W1-L	0.11	0.10	1	0.94
			W1-U	1.38	1.30		
				1.49	1.40		
Fourth	R2	Bedroom	W2-L	0.14	0.13	1	0.97
			W2-U	1.84	1.78		
				1.98	1.91		
Fourth	R3	Living Room	W3-L	0.18	0.17	1.5	0.96
			W3-U	2.30	2.21		
				2.48	2.38		
Fourth	R4	Bedroom	W4-L	0.15	0.14	1	0.95
			W4-U	1.85	1.77		
				2.00	1.91		
Fourth	R5	Bedroom	W5-L	0.17	0.16	1	0.95
			W5-U	2.10	1.99		
				2.26	2.15		
Fourth	R6	Living Room	W6-L	0.19	0.17	1.5	0.94
			W6-U	2.32	2.20		
				2.51	2.37		
Fourth	R7	Living Room	W7-L	0.19	0.17	1.5	0.94
			W7-U	2.31	2.18		
				2.50	2.35		
Fourth	R8	Bedroom	W8-L	0.17	0.15	1	0.93
			W8-U	2.07	1.94		
				2.24	2.09		
Fourth	R9	Bedroom	W9-L	0.14	0.13	1	0.93
			W9-U	1.81	1.69		
				1.95	1.82		
Fourth	R10	Bedroom	W10-L	0.27	0.25	1	0.94
			W10-U	3.38	3.17		
				3.65	3.42		
Fourth	R11	Bedroom	W11-L	0.22	0.21	1	0.97
			W11-U	2.69	2.63		
				2.91	2.84		
Fourth	R12	Bedroom	W12-L	0.13	0.11	1	0.89
			W12-U	1.57	1.39		
				1.70	1.50		
Fourth	R13	Bedroom	W13-L	0.15	0.13	1	0.87
			W13-U	1.89	1.64		
				2.04	1.77		
Fourth	R14	Living Room	W14-L	0.18	0.15	1.5	0.84
			W14-U	2.20	1.86		
				2.38	2.01		